CLAIMS

1. An echo canceller circuit comprising:

a digital filter having adaptive tap coefficients to simulate an echo response occurring during the call, the adaptive tap coefficients being updated during the call using a Least Squares process; and

a tap energy detector for identifying and dividing groups of taps having high energy from groups of taps having low energy, the high energy tap groups being larger in number in the low energy tap groups, the high energy tap groups being adapted separately from the low energy tap groups using the Least Squares process.

2. An echo canceller circuit as claimed in claim 1 wherein the tap energy detector divides the adaptive tap coefficients into a plurality of windows and groups windows having high energy to form the high energy tap group.

3. An echo canceller circuit as claimed in claim 1 wherein the Mean Squares process is a Least Means Squares process.

4. An echo canceller circuit as claimed in claim 1 wherein the high energy tap groups are adapted using a first gain coefficient a and the low energy tap groups are adapted using a second game coefficient a', wherein $a > a'$.

5. An echo canceller comprising:

at least one input for receiving a far-end signal of a call;

at least one input for receiving a signal-plus-echo signal of the call, the signal-plus-echo signal having a signal component corresponding to an echo response of a transmission medium carrying the call;

a first digital filter receiving the far-end signal and having non-adaptive tap coefficients to simulate the echo response;

a summer circuit for subtracting the filtered far-end output signal of the first digital filter from the signal-plus-echo signal to generate an echo compensated signal for transmission to a far-end;

a second digital filter receiving the far-end signal and having adaptive tap coefficients to simulate the echo response, the adaptive tap coefficients being updated during the call using a Least Squares process;

a coefficient transfer controller disposed to transfer the adaptive tap coefficients of the second digital filter to replace the tap coefficients

of the first digital filter when a set of one or more conditions are met; and

a tap energy detector for identifying and dividing groups of taps having high energy from groups of taps having low energy, the high energy tap groups being larger in number than the low energy tap groups, the high energy tap groups being adapted separately from the low energy tap groups using the Least Squares process.

6. An echo canceller circuit as claimed in claim 5 wherein the tap energy detector divides the adaptive tap coefficients into a plurality of windows and groups windows having high energy to form the high energy tap group.

7. An echo canceller circuit as claimed in claim 5 wherein the Mean Squares process is a Least Means Squares process.

8. An echo canceller circuit as claimed in claim 5 wherein the high energy tap groups are adapted using a first gain coefficient a and the low energy tap groups are adapted using a second game coefficient a', wherein $a > a'$.

9. An echo canceller as claimed in claim 5 wherein the coefficient transfer controller transfers the adaptive tap coefficients of the second digital filter to replace the tap coefficients of the first digital filter when $\hat{E}$ is greater than $\overline{E}$ and, concurrently, $\hat{E}$ is greater than E_{max}, wherein $\overline{E}$ corresponds to the ratio between a signal-plus-echo signal and a first echo compensated signal using the first digital filter, $\hat{E}$ corresponds to the ratio between a signal-plus-echo signal and a second echo compensated signal using second digital filter, and E_{max} corresponds to the largest $\hat{E}$ occurring over a call during which a transfer has occurred.

10. An echo canceller circuit as claimed in claim 1 wherein separate adaptation of the high energy taps from the low energy taps is inhibited in the presence of a non-linear echo path response.

11. An echo canceller circuit as claimed in claim 1 wherein separate adaptation of the high energy taps from the low energy taps is inhibited in the presence of a narrow band, far end signal.

12. An echo canceller as claimed in claim 5 wherein separate adaptation of the high energy taps from the low energy taps is inhibited in the presence of a non-linear echo path response.

13. An echo canceller as claimed in claim 5 wherein separate adaptation of the high energy taps from the low energy taps is inhibited in the presence of a narrow band, far end signal.